



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,975	08/02/2006	Edward James Morton	CXR102.ORD	4378
29484	7590	11/21/2007		
PATENTMETRIX			EXAMINER	
14252 CULVER DR. BOX 914			YUN, JURIE	
IRVINE, CA 92604				
			ART UNIT	PAPER NUMBER
			2882	
			MAIL DATE	DELIVERY MODE
			11/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/554,975

Applicant(s)

MORTON ET AL.

Examiner

Jurie Yun

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26,28-37,42-50 and 54-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26,28-37,42-50 and 54-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. The preliminary amendment filed 10/25/05 has been entered.

Claim Objections

2. Claim 43 is objected to because of the following informalities: there is lack of antecedence for "the source points". It is assumed that claim 43 depends on claim 42, and has been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

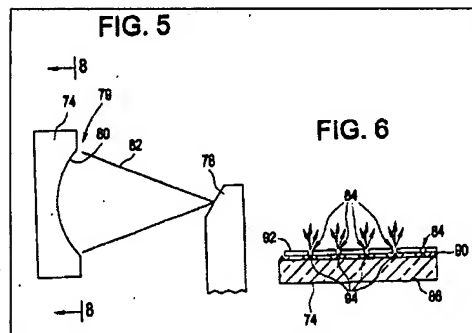
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

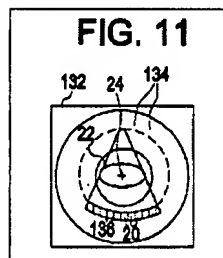
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-10, 12, 29, 30, 34-37, and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Price et al. (USPN 6,760,407 B2).
5. With respect to claim 1, Price et al. disclose an electron source for an X-ray scanner comprising: electron emitting means (Fig. 6, 84) defining a plurality of electron source regions; an extraction grid (92) defining a plurality of grid regions each associated with at least a respective one of the electron source regions; and control means arranged to control the relative electrical potential between each of the grid regions and the respective source region so that the position from which electrons are

extracted from the emitting means can be moved between said source regions (column 6, lines 13+).



6. With respect to claim 42, Price et al. disclose an X-ray scanner comprising: an X-ray source (Fig. 11, 134) having a plurality of X-ray source points; X-ray detection means (136); and control means arranged to control the source to produce X-rays from a plurality of successive groupings of the source points and to record a reading of the detection means for each of the illuminations (column 6, lines 13+ & column 7, lines 57+).



7. With respect to claim 2, Price et al. disclose the extraction grid (92) comprises a plurality of grid elements spaced along the emitting means.

8. With respect to claim 3, Price et al. disclose the emitting means comprises an elongate emitter member (the emitting means are arranged two dimensionally – see Fig. 8 – each row of emitters is elongate) and the grid elements (92) are spaced along

the emitter member such that the source regions are each at a respective position along the emitter member.

9. With respect to claim 4, Price et al. disclose the control means is arranged to connect each of the grid elements to either an extracting electrical potential which is positive with respect to the emitting means or an inhibiting electrical potential which is negative with respect to the emitting means (column 5, lines 43+).

10. With respect to claim 5, Price et al. disclose the control means is arranged to connect the grid elements to the extracting potential successively in adjacent pairs so as to direct a beam of electrons between each pair of grid elements (column 6, lines 13+).

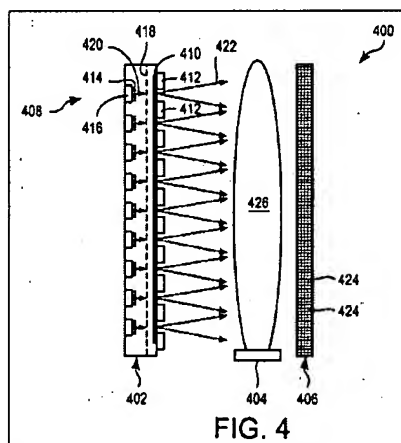
11. With respect to claim 6, Price et al. disclose each of the grid elements is connected to the same electrical potential as either of the grid elements which are adjacent to it (column 6, lines 13+).

12. With respect to claims 7 and 8, Price et al. disclose the control means connects the grid elements to either side of an adjacent pair to the inhibiting potential while each of said adjacent pairs is connected to the extracting potential, wherein the control means connects all remaining grid elements to the inhibiting potential while each of said adjacent pairs is connected to the extracting potential (column 6, lines 13+).

13. With respect to claims 9 and 10, Price et al. disclose the grid elements (92) comprise parallel elongate members, wherein the emitting member (84) extends substantially perpendicularly to the grid elements (the emitters extend longitudinally in rows between the grid elements).

14. With respect to claim 12, Price et al. disclose the grid elements (92) are planar and extend in a plane substantially perpendicular to the emitter member (84).
15. With respect to claim 29, Price et al. disclose the source regions are formed on respective emitting members which are electrically insulated from each other and the control means is arranged to vary the electric potential of the emitting members to control said relative electric potentials (column 5, lines 30+ & column 6, lines 13+).
16. With respect to claim 30, Price et al. disclose the grid is held at a constant potential (column 5, lines 30+).
17. With respect to claim 34, Price et al. disclose the control means activates each of the source regions in turn (column 8, lines 2-4).
18. With respect to claim 35, Price et al. disclose the control means controls the electric potentials of the source regions and the grid regions to extract electrons from a plurality of successive groupings of said source regions (column 6, lines 13+).
19. With respect to claims 36 and 37, Price et al. disclose said electron source and at least one anode comprise an X-ray tube (Fig. 11), and further comprising an elongate anode arranged such that beams of electrons produced by different grid elements will hit different parts of the anode.
20. Claims 42-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhou et al. (US 2004/0213378 A1).
21. With respect to claim 42, Zhou et al. disclose an X-ray scanner comprising: an X-ray source (Fig. 4, 402) having a plurality of X-ray source points; X-ray detection means

(406); and control means arranged to control the source to produce X-rays from a plurality of successive groupings of the source points and to record a reading of the detection means for each of the illuminations (paragraphs 0028 & 0036-0046).



22. With respect to claim 48, Zhou et al. disclose an X-ray scanner comprising: an X-ray source comprising a linear array of source points (Fig. 4, 414); and a detector array (406), comprising a linear arrangement of detectors, wherein the linear arrays are arranged substantially perpendicular to each other; and control means, wherein control means is arranged to control either the source points or the detector array to operate in a plurality of successive groupings, each grouping comprising groups of different numbers of the source points or detectors, and to analyse readings from the detectors using a mathematical transform to produce a three-dimensional image of an object (paragraphs 0012 & 0036-0046).

23. With respect to claim 43, Zhou et al. disclose the source points are arranged in a linear array (see Fig. 4).

24. With respect to claim 44, Zhou et al. disclose the detection means (Fig. 3, 304) comprises a linear array of detectors extending in a direction substantially perpendicular to the linear array of source points.

25. With respect to claim 45, Zhou et al. disclose the control means is arranged to record a reading from each of the detectors for each illumination (paragraphs 0036-0046).

26. With respect to claim 46, Zhou et al. disclose the control means is arranged to use the readings from each of the detectors to reconstruct features of a respective layer of the object (paragraphs 0036-0046).

27. With respect to claim 47, Zhou et al. disclose the control means is arranged to use the readings to build up a three dimensional reconstruction of the object (paragraphs 0036-0046).

28. With respect to claim 49, Zhou et al. disclose the control means is arranged to operate the source points in said plurality of groupings, and readings are taken simultaneously from each of the detectors for each of said groupings (paragraphs 0028+).

29. With respect to claim 50, Zhou et al. disclose the control means is arranged to operate the detectors in said plurality of groupings and, for each grouping, to activate each of the source points in turn to produce respective readings (paragraphs 0028+).

Claim Rejections - 35 USC § 103

30. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

31. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Price et al. (USPN 6,760,407 B2) as applied to claims 1 and 2 above, and further in view of Brettschneider (USPN 5,259,014).

32. With respect to claim 11, Price et al. do not disclose the grid elements comprise wires. Price et al. disclose the grid elements comprise film. Brettschneider discloses use of wire grid elements (column 2, lines 59-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the grid elements of Price et al. with wire grid elements, because these are capable of withstanding high thermal loads, as taught by Brettschneider.

33. Claims 13, 24-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Price et al. (USPN 6,760,407 B2) as applied to claims 1, 2, and 4 above.

34. With respect to claim 13, Price et al. do not specifically disclose the grid elements are spaced from the emitting means by a distance approximately equal to the distance between adjacent grid elements. However, Price et al. are capable of having the grid elements spaced from the emitting means by a distance approximately equal to the distance between adjacent grid elements. It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See

MPEP 2114. In this case, it should be recognized that the wherein clause is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

35. With respect to claim 24, Price et al. do not specifically disclose the grid elements are spaced from the emitter such that if a group of one or more adjacent grid elements are switched to the extracting potential, electrons will be extracted from a length of the emitter member which is longer than the width of said group of grid elements. However, Price et al. are capable of this. It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

36. With respect to claim 25, Price et al. do not specifically disclose the grid elements are spaced from the emitter member by a distance which is at least substantially equal to the distance between adjacent grid elements. However, Price et al. are capable of this. It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

37. With respect to claim 26, Price et al. do not specifically disclose the grid elements are spaced from the emitter member by a distance of 5 mm. However, Price et al. are capable of this. It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

38. With respect to claim 28, Price et al. disclose the grid elements (92) are arranged to at least partially focus the extracted electrons into a beam.

39. Claims 14-23 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Price et al. (USPN 6,760,407 B2) as applied to claims 1, 2, 29, and 30 above, and further in view of Gravelle et al. (USPN 5,633,907).

40. With respect to claims 14 and 31, Price et al. do not specifically disclose a plurality of focusing elements arranged to focus beams of electrons after they have passed the grid. Gravelle et al. disclose a plurality of focusing elements (23) arranged to focus beams of electrons after they have passed the grid (28 & 29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Price et al. to have a plurality of focusing elements arranged to focus beams of electrons after they have passed the grid, to ensure accurate positioning of the beam of electrons in the desired direction.

41. With respect to claim 15, Price et al./Gravelle et al. do not specifically disclose the focusing elements are elongate. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the focusing elements elongate, to match the elongate emitter configuration.

42. With respect to claim 16, Price et al./Gravelle et al. do not specifically disclose the focusing elements are parallel to the grid elements. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the focusing elements parallel to the grid elements, because this would be necessary for proper focusing of the beam in an elongate emitter configuration.

43. With respect to claims 17 and 18, Price et al. as modified by Gravelle et al. disclose the focusing elements are aligned with the grid elements such that electrons passing between any pair of the grid elements will pass between a corresponding pair of focusing elements, wherein the focusing elements are spaced at equal intervals to the grid elements (Gravelle et al. - column 2, lines 59+). It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

44. With respect to claims 19 and 20, Price et al. as modified by Gravelle et al. disclose the focusing elements are arranged to be connected to an electric potential which is positive with respect to the emitter, wherein the focusing elements are

arranged to be connected to an electric potential which is negative with respect to the grid elements (Gravelle et al. - column 2, lines 59+).

45. With respect to claim 21, Price et al. as modified by Gravelle et al. disclose the control means is arranged to control the potential applied to the focusing elements thereby to control focusing of the beams of electrons (Gravelle et al. - column 2, lines 59+).

46. With respect to claim 22, Price et al. as modified by Gravelle et al. do not disclose the focusing elements comprise wires. However, wire focusing elements are known to those of ordinary skill in the art, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Price et al./Gravelle et al. to have wire focusing elements, as these would produce the same results.

47. With respect to claim 23, Gravelle et al. do not disclose the focusing elements (23) are planar and extend in a plane substantially parallel to the direction in which the source regions are arranged to emit electrons. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Price et al./Gravelle et al. to have the focusing elements planar and extending in a plane parallel to the direction in which the source regions are arranged to emit electrons, to match the elongate configuration of the emitters.

48. With respect to claims 32 and 33, Price et al. as modified by Gravelle et al. disclose the focusing elements (Gravelle et al. - 23) are held at the same potential as the grid (Price et al. - 92), wherein each focusing element is spaced at a distance between and in front of each adjacent pair of emitter members (84).

49. Claims 54-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Price et al. (USPN 6,760,407 B2) as applied to claims 1 and 29 above, and further in view of Jones et al. (USPN 5,144,191).

50. With respect to claim 54, Price et al. do not disclose the emitting members comprise emitter pads supported on an insulating emitter block. Jones et al. disclose emitting members comprise emitter pads (56 & 58 & 60) supported on an insulating emitter block (48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the emitting members of Price et al. with emitter pads supported on an insulating emitter block, as taught by Jones et al., as this would be a choice of design because these would perform the same function as the emitting members taught by Price et al.

51. With respect to claim 55, Jones et al. disclose a layer of conductive material formed on the insulating block to provide electrical connection to the emitter pads (column 8, lines 32+).

52. With respect to claim 56, Jones et al. disclose the emitter pads are applied onto the layers of conductive material (column 8, lines 32+).

53. With respect to claims 57 and 58, Jones et al. disclose a heating element adjacent to the emitter block, wherein the heating element comprises a block of insulating material with a layer of conductive material applied to it forming a heating element (column 8, lines 32+).

54. With respect to claim 59, Jones et al. disclose a connecting element providing electrical connections for each of the emitter pads and flexible connecting elements providing electrical connections between the connecting element and the emitter block (column 8, lines 32).

55. With respect to claim 60, Jones et al. do not specifically disclose the connecting elements are arranged to accommodate relative movement of the connecting element and the emitter pad caused by thermal expansion. However, Jones et al. are capable of this. It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

Conclusion

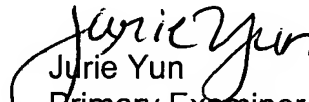
56. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 571 272-2497. The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/554,975
Art Unit: 2882

Page 15

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Julie Yun
Primary Examiner
Art Unit 2882

November 18, 2007